Attachment 6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT 11 2017

Ms. Michelle Walker Owenby
Director
Division of Air Pollution Control
Tennessee Department of Environment and Conservation
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, Tennessee 37243

Dear Ms. Owenby:

Thank you for submitting the state of Tennessee's 2017 Annual Ambient Air Monitoring Network Plan (Network Plan) dated July 1, 2017. The Network Plan is required by 40 Code of Federal Regulations (CFR) §58.10. The U.S. Environmental Protection Agency Region 4 understands that the Tennessee Department of Environment and Conservation (TDEC) provided the public a 30-day review period and no comments were received.

With this letter, the EPA approves the TDEC's Network Plan with the exception that the EPA does not approve the sulfur dioxide (SO_2) portion of the Network Plan at this time. In prior communication, your office indicated that additional monitor start-up requests for the Kingsport, TN, area will be submitted to the EPA pursuant to 40 CFR §58.10(b) in a Network Plan addendum. Following completion of the state's public inspection process for these proposed monitors, TDEC will need to submit a Network Plan addendum containing final proposals for the new sites to the EPA for approval.

In addition, TDEC submitted a letter on March 6, 2017, requesting waivers to the 40 CFR Part 58, Appendix E siting requirements for the Jackson monitoring site (Air Quality System (AQS) # 47-113-0006) located in Jackson, TN, and the Lawrence monitoring site (AQS # 47-099-0002) located in Loretto, TN. The TDEC's March 6, 2017, letter stated "TDEC DAPC will include the proposed site relocations in the Network Plan that will be provided for public review during the May 1 to June 30, 2017, timeframe." The EPA approved the waiver requests with the understanding that the TDEC would propose new locations that meet siting requirements in the 2017 Network Plan, with relocation to occur by December 31, 2017. The 2017 Network Plan did not include relocation requests for either the Jackson or Lawrence sites. Once the details of the sites are finalized and the state's public inspection process is complete, the state will need to submit the information in a Network Plan addendum for EPA approval. The request for approval of these two sites can be combined with the request for approval of the SO_2 sites referenced above. If the sites are not relocated and operating by January 1, 2018, the TDEC will be required to submit a new waiver request.

We have enclosed comments on your Network Plan and will continue to work with your agency on the portions of the Network Plan that have not been approved with this letter. We appreciate the hard work that went into providing site evaluations and updated photos for all monitoring sites in Tennessee.

Thank you for working with the EPA to monitor air pollution and promote healthy air quality in Tennessee. Please let us know of any problems in meeting any of the requirements we have identified. If you have any questions or concerns, please contact Gregg Worley at (404) 562-9141 or Sara Waterson at (404) 562-9061.

Sincerely,

Beverly H. Banister
Director
Air, Pesticides and Toxics Management Division

Enclosure

cc: Ms. Lynne A. Liddington, Director
Knox County Air Quality

Mr. Robert Rogers, Technical Manager
Shelby County Health Department
Pollution Control Section

Mr. Bob Colby, Director
Chattanooga-Hamilton County Air Pollution
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Mr. John Finke, Director
Nashville / Davidson County Metro Public
Health Department Pollution Control Division

CY 2017 State of Tennessee Ambient Air Monitoring Network Plan
U.S. EPA Comments and Recommendations

This document contains the U.S. Environmental Protection Agency comments and recommendations on the state of Tennessee's 2017 ambient air monitoring network plan (Network Plan). Ambient air monitoring rules, which include regulatory requirements that address network plans, data certification, and minimum monitoring requirements, among other requirements, are found in 40 CFR Part 58. Minimum monitoring requirements for criteria pollutants are listed in 40 CFR Part 58, Appendix D, including those for ozone (O_3), particulate matter less than 2.5 microns ($PM_{2.5}$), particulate matter less than 10 microns (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), and lead (Pb).

The minimum monitoring requirements are based on core based statistical area (CBSA) boundaries as defined by the U.S. Office of Management and Budget (OMB), July 1, 2016, population estimates from the U.S. Census Bureau, and historical ambient air monitoring data. Minimum monitoring requirements for O_3, $PM_{2.5}$, and PM_{10}, only apply to metropolitan statistical areas (MSAs), which are a subset of CBSAs. OMB currently defines 26 CBSAs in the state of Tennessee. These CBSAs and the respective July 1, 2016, population estimates from the U.S. Census Bureau are shown in Table 1.

Table 1: Core Based Statistical Areas and July 1, 2016 Population Estimates

CBSA Name	CBSA Type	Population
Nashville-Davidson-Murfreesboro-Franklin, TN	Metropolitan Statistical Area	1,865,298
Memphis, TN-MS-AR	Metropolitan Statistical Area	1,342,842
Knoxville, TN	Metropolitan Statistical Area	868,546
Chattanooga, TN-GA	Metropolitan Statistical Area	551,632
Kingsport-Bristol-Bristol, TN-VA	Metropolitan Statistical Area	306,334
Clarksville, TN-KY	Metropolitan Statistical Area	282,349
Johnson City, TN	Metropolitan Statistical Area	201,661
Jackson, TN	Metropolitan Statistical Area	129,527
Cleveland, TN	Metropolitan Statistical Area	121,262
Morristown, TN	Metropolitan Statistical Area	117,320
Cookeville, TN	Micropolitan Statistical Area	109,548
Tullahoma-Manchester, TN	Micropolitan Statistical Area	102,705
Sevierville, TN	Micropolitan Statistical Area	96,673
Greeneville, TN	Micropolitan Statistical Area	68,615
Crossville, TN	Micropolitan Statistical Area	58,655
Athens, TN	Micropolitan Statistical Area	52,850
Shelbyville, TN	Micropolitan Statistical Area	47,484
Lawrenceburg, TN	Micropolitan Statistical Area	43,081
McMinnville, TN	Micropolitan Statistical Area	40,516
Dyersburg, TN	Micropolitan Statistical Area	37,708
Union City, TN-KY	Micropolitan Statistical Area	36,757
Newport, TN	Micropolitan Statistical Area	35,219
Martin, TN	Micropolitan Statistical Area	33,507
Dayton, TN	Micropolitan Statistical Area	32,442
Paris, TN	Micropolitan Statistical Area	32,310
Lewisburg, TN	Micropolitan Statistical Area	31,915
Brownsville, TN	Micropolitan Statistical Area	17,853

Monitoring Network Changes Proposed by the TDEC

The TDEC's Network Plan identifies proposed changes to the state's ambient air monitoring network. The local agency monitoring programs included in the state Network Plan are operated by the Chattanooga-Hamilton County Air Pollution Control Bureau (Chattanooga), the Metro Public Health Department (Nashville), the Knox County Department of Air Quality Management (Knoxville), and the Memphis/Shelby County Health Department (Memphis). The EPA's rationale for approval or disapproval of specific network changes can be found below in the pollutant sections of this document. Monitors proposed for discontinuation and the EPA's determination are summarized in Table 2.

Table 2: Monitors Proposed for Discontinuation

Agency	AQS ID	Site Name	Pollutant	Type	Comments
Knoxville	47-093-1017	Rule	Pb	SLAMS	Approved, Shutdown: Knoxville is required to operate one Pb monitoring site yet operates three sites. The Rule site historically maintains the lowest design value and significantly lower monthly averages.

The EPA reviewed the requests for monitor discontinuation and determined that they met the requirements of 40 CFR §58.14(c) for monitor discontinuation. The minimum monitoring requirements for $PM_{2.5}$, CO, Pb, and O_3 found in 40 CFR Part 58, Appendix D will continue to be met for the respective MSAs after the approved monitors are discontinued. Nashville and Chattanooga maintain waivers of the PM_{10} monitoring requirements under 40 CFR Part 58, Appendix D, Section 4.6.

Monitors proposed for relocation, changes in sampling frequency, or monitor start-up and the EPA's determination are summarized in Table 3.

Table 3: Proposed Changes in Monitoring

Agency	AQS ID	Site Name	Pollutant	Type	Comments
TDEC	47-163-2002	Blountville	O_3	SLAMS	Approved, Reconfiguration: Request approved on February 23, 2017.
TDEC	47-187-0106	Fairview	O_3	SLAMS	Approved, Relocation. Monitor is moved approximately 222 meters from the previous site in order to meet siting requirements.
Memphis	47-157-0075	Shelby Farms NCore	Ceilometer	SLAMS	Pending, Waiver Request: Memphis requested a waiver to allow meteorological measurements for cloud cover and ceiling heights to be obtained from other nearby sites. Additional information needed from Memphis. See PAMS section below.

Air Quality Index (AQI) Reporting
40 CFR § 58.50

AQI reporting is required for MSAs with populations of 350,000 or more. Four MSAs in the state of Tennessee meet this criterion: Chattanooga, Tennessee-Georgia; Knoxville, Tennessee; Memphis, Tennessee-Mississippi-Arkansas; and Nashville-Davidson-Murfreesboro, Tennessee. The Network Plan indicates that an AQI is being reported in each of these MSAs. Thus, the state is meeting its AQI

reporting requirements. In addition, the TDEC is voluntarily reporting an AQI for the Kingsport-Bristol-Bristol, TN-VA and the Clarksville, TN-KY CBSAs.

National Core (NCore) Monitoring Network
40 CFR Part 58, Appendix D, Section 3.0

The TDEC designated two NCore sites in its Network Plan. The first site (AQS # 47-157-0075) is located at Shelby Farms on Haley Road in Memphis. The EPA's approval of this site was granted on October 30, 2009.

The Look Rock site (AQS # 47-009-0101) is designated as a rural NCore site and is located in Great Smoky Mountains National Park. The site has been operated collaboratively for many years by the National Park Service (NPS), the Tennessee Valley Authority (TVA), the TDEC, and the EPA. In early 2014, TVA informed the EPA, the TDEC, and the NPS of its intention to discontinue all air monitoring activities at the site as of October 2014 and transfer ownership of its monitoring equipment to one or more interested parties. The NPS, the TDEC, the EPA Region 4, and the EPA Office of Air Quality and Standards (OAQPS) have agreed to fund and maintain operations of required criteria pollutant measurements except regulatory particulate matter measurements listed in the definition of NCore in 40 CFR §58.1. The TDEC will no longer upload the ambient data from the Look Rock or Cades Cove into AQS after the end of 2017. The NPS will upload the ambient data into AQS. The TDEC's auditing schedule of NPS sites may change depending on available funding.

O_3 Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.1 and Table D-2

The O_3 network described in the Network Plan meets the minimum monitoring requirements specified by 40 CFR Part 58, Appendix D, Table D-2 in all areas.

On February 10, 2017, the TDEC submitted a request to relocate the Blountville monitoring site (AQS # 47-163-2002). In order to meet 40 CFR Part 58, Appendix E siting requirements, the site would be moved approximately 25 meters Southwest of the current site to address drip line obstructions. Due to the proximity to the current site, the EPA considered this a reconfiguration of the site rather than a relocation; therefore, public inspection and comment were not required. The EPA approved the reconfiguration of the O_3 monitor at the Blountville monitoring site on February 23, 2017. The relocated monitor will continue to report data to AQS # 47-163-2002.

The TDEC preliminarily proposed to relocate the Loudon Pope site (AQS # 47-105-0108) to Loudon Elementary School (formerly Loudon Middle School, AQS # 47-105-0109) in the 2015 Network Plan. On March 4, 2016, the TDEC submitted the request in a Network Plan addendum. The EPA approved this request on March 16, 2016. The O_3 monitor was relocated to the Loudon Elementary School site March 3, 2017. In instances where relocation occurs, the sites may be deemed to be measuring the same air mass. In these cases, the design values (DVs) from the two sites can be linked in order to create a combined DV. The EPA approves the calculation of a combined DV for the Loudon Pope site and the Loudon Elementary School site for ongoing comparison to the national ambient air quality standards (NAAQS).

The Network Plan states that Chattanooga continues to search for a new location for the Eastside Utility District O_3 monitor (AQS # 47-065-4003). We recommend that Chattanooga consult with the EPA when

selecting a new site location. Please note that as soon as Chattanooga identifies a suitable site, the proposed revisions to the network, including the identification of monitors to be discontinued or relocated, must be submitted to the EPA for approval.

The proposed O_3 monitoring network described in the Network Plan meets all of the design criteria of 40 CFR Part 58.

CO Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.2

Ambient air monitoring network design criteria for CO are found in 40 CFR Part 58, Appendix D, Section 4.2. This section requires CBSAs with populations over one million but less than 2.5 million to operate one CO monitor collocated with a near-road NO_2 monitor, by January 1, 2017. This requirement is being met in the Nashville-Davidson-Murfreesboro-Franklin, TN CBSA by the CO monitor operating at the near-road site (AQS # 47-037-0040) and in the Memphis, TN-MS-AR CBSA by the CO monitor operating at the Southwest TN Community College near-road site (AQS # 47-157-0100).

Memphis operates one CO monitor in addition to the near-road NO_2 monitor at the Shelby Farms NCore site (AQS # 47-157-0075). Please update the memorandum of agreement (MOA) with the Mississippi Department of Environmental Quality and Arkansas Department of Environmental Quality accordingly.

The proposed CO monitoring network described in the Network Plan meets all of the design criteria of 40 CFR Part 58.

NO_2 Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.3

Ambient air monitoring network design criteria for NO_2 are found in 40 CFR Part 58, Appendix D, Section 4.3. Three types of NO_2 monitoring are required: near-road, area-wide, and Regional Administrator required. These types of NO_2 monitoring are described in Sections 4.3.2, 4.3.3, and 4.3.4, respectively.

The EPA's Phase 3 regulatory requirements included the establishment of an NO_2 near-road site in CBSA's of populations between 500,000 and 1,000,000 by January 1, 2017. The Chattanooga, TN-GA and Knoxville, TN CBSAs fell into this population range as of the U.S. Census Bureau's 2016 estimates. The EPA published a final rule that removed this NO_2 monitoring requirement (also known as Phase 3 of the near-road network) from Appendix D of 40 CFR Part 58 and it became effective on December 30, 2016 (81 FR 96381). Accordingly, the Chattanooga, TN-GA CBSA and the Knoxville, TN CBSA are not required to establish NO_2 near-road monitors. Please note, Page 11 of the Network Plan states that the CFR requirement for the near-road monitor has not been revised.

Ambient air monitoring network design criteria for area-wide NO_2 sites are found in 40 CFR Part 58, Appendix D, Section 4.3.3. Any CBSA with a population of 1,000,000 or more persons is required to monitor a location of expected highest NO_2 concentration representing the neighborhood or larger spatial scales. The East Health Center site (AQS # 47-037-0011) was approved as the area-wide NO_2 monitoring site for the Nashville-Davidson-Murfreesboro-Franklin, TN CBSA in 2013. The area-wide requirement for the Memphis, TN-MS-AR CBSA is being met by the monitor operated in Marion, Arkansas by the state of Arkansas (AQS # 05-035-0005). The operation of this site was agreed to in a

MOA between Memphis and the states of Arkansas and Mississippi. The MOA was included in the Network Plan.

Ambient air monitoring network design criteria for the Regional Administrator required NO_2 monitoring, often referred to as RA-40 monitoring, are found in 40 CFR Part 58, Appendix D, Section 4.3.4. This section states that "the Regional Administrators, in collaboration with states, must require a minimum of forty additional NO_2 monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations. The Regional Administrators, working with states, may also consider additional factors to require monitors beyond the minimum network requirement." However, not all states are required to have such monitors and EPA did not propose any for Tennessee. As a result, the state did not include a Regional Administrator required NO_2 monitor in its Network Plan. The full list of NO_2 monitors identified by the Regional Administrators can be found on the EPA's website at http://www.epa.gov/ttnamti1/svpop.html.

The NO_2 monitoring network described by the TDEC in its Network Plan meets all of the design criteria of 40 CFR Part 58.

SO_2 Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.4

Ambient air monitoring network design criteria for SO_2 are found in 40 CFR Part 58, Appendix D, Section 4.4. This section requires that "The population weighted emissions index (PWEI) shall be calculated by states for each core based statistical area (CBSA)..." As a result, the SO_2 monitoring site(s) required in each CBSA will satisfy minimum monitoring requirements if the monitor(s) is sited within the boundaries of the parent CBSA and is of the following site types: population exposure, maximum concentration, source-oriented, general background, or regional transport. A SO_2 monitor at an NCore station may satisfy minimum monitoring requirements if that monitor is located within a CBSA with minimally required monitors consistent with Appendix D, Section 4.4.

The TDEC operates SO_2 monitors in Anderson County (AQS # 47-001-0101) and Sullivan County (AQS # 47-163-0007) to meet the PWEI requirement of one SO_2 monitor for the Knoxville, TN CBSA and the Kingsport-Bristol-Bristol, TN-VA CBSA, respectively. SO_2 monitors are also required and operating in the Memphis, TN-MS-AR CBSA (AQS # 47-157-0075) and the Nashville-Davidson-Murfreesboro-Franklin, TN CBSA (AQS # 47-037-0011) to meet the PWEI requirement of one SO_2 monitor for each respective CBSA.

The TDEC has agreed to establish two additional SO_2 monitoring sites (one in the Brookwood Road area and one the Happy Hill area) to characterize the maximum SO_2 concentrations in the Sullivan County SO_2 nonattainment area. The exact locations of the two sites have not been finalized. Attainment demonstration modeling will be considered when selecting the sites. Once the details of the sites are finalized, the state will need to submit an addendum to the Network Plan containing the site proposals. The Network Plan addendum must include all of the required information for proposed sites under 40 CFR §58.10(b). The addendum should also include the TDEC's rationale for selecting the proposed sites, any air modeling data that the TDEC used to select the sites, and supporting information, such as site photos, maps, wind roses, and information about the target sources. Once the TDEC develops the SO_2 monitoring proposals, the state will need to make the information available for public inspection and comment. Upon completion of the public inspection process, the Network Plan addendum needs to

be submitted to EPA Region 4 for approval. We will continue to work with your agency as needed to facilitate the establishment of these sites as expeditiously as possible.

Pb Monitoring Requirements
40 CFR Part 58, Appendix A, Section 3.4
40 CFR Part 58, Appendix D, Section 4.5

The monitoring requirements for Pb found at 40 CFR Part 58, Appendix D, Section 4.5 require that "At a minimum, there must be one source-oriented SLAMS [State and Local Air Monitoring Station] site located to measure the maximum Pb concentration in ambient air resulting from each non-airport Pb source which emits 0.50 or more tons per year and from each airport which emits 1.0 or more tons per year..." Currently, monitoring is required near two sources in Tennessee: the Exide Technologies facility in Bristol and the Gerdau facility in Knoxville. Monitors, including collocated quality control monitors, near both of these sources are identified in the Network Plan.

The requirement to measure Pb-PM_{10} at NCore sites in areas over 500,000 in population was proposed for elimination due to the extremely low concentrations being measured at these sites. On March 28, 2016, the EPA published changes in the ambient air monitoring rules for the NCore network design and removed Pb monitoring from the requirements (81 FR 17248). This final rule became effective on April 27, 2016. As a result, Memphis collected its final Pb sample on June 29, 2016 at the Shelby Farms NCore site (AQS # 47-157-0075). The Pb monitoring network described in the Network Plan meets all of the design criteria of 40 CFR Part 58.

Knoxville proposed to eliminate the Rule Pb monitoring site (AQS # 47-093-1017). Knoxville is required to operate one Pb monitor, yet operates three sites. The Rule site has had the lowest DV and significantly lower monthly averages than the Burnside (AQS # 47-093-0027) and Ameristeel (AQS # 47-093-0023) monitoring sites. In July 2016, EPA conducted a technical system audit (TSA) of Knoxville's air monitoring program. In this audit, it was determined that the lab conducting the Pb analyses was not using an approved federal equivalent method. Knoxville began utilizing the national contract for the analysis for lead in ambient air that is serviced by Eastern Research Group (ERG). Knoxville provided historical filters to ERG for reanalysis. Knoxville provided a line graph of the original analysis and ERG's re-analysis of the filters. The results show a strong positive correlation between the two data sets, $r=0.996$. Though the original data cannot be used for determination of NAAQS compliance, Knox has demonstrated there is a strong enough correlation between the original and reanalyzed data sets to demonstrate with a high probability that the Rule site has a low DV and monthly averages. In summary, the EPA approves the request to shut down the Rule site because there are two other Pb monitors in the area and the site had low historical Pb DVs.

PM_{10} Monitoring Requirements
40 CFR Part 58, Appendix A, Section 3.3
40 CFR Part 58, Appendix D, Section 4.6 and Table D-4

The minimum number of PM_{10} monitors required for the Nashville-Davidson-Murfreesboro-Franklin, TN, CBSA is two. In the 2016 Network Plan, Nashville requested a waiver of the PM_{10} minimum monitoring requirement. The EPA approved the waiver request in the 2016 Network Plan. Chattanooga petitioned EPA on August 28, 2014, to delete the collocated PM_{10} site at South Broad Street (AQS # 47-065-0006). The EPA approved the waiver request in the 2015 Network Plan. Please note that the waiver requests must be renewed during the next five-year network assessment (2020).

Memphis is required to operate, at a minimum, two PM_{10} monitors in the CBSA and currently operates two. The monitors include the monitor at Shelby Farms NCore (AQS # 47-157-0075) and a continuous PM_{10} monitor at Alabama Avenue (AQS # 47-157-0024).

Knoxville replaced the PM_{10} high volume (hi-vol) monitors with a TEOM 1405a FEM continuous PM_{10} monitor at the Air Lab site (AQS # 47-093-1013). The continuous monitor was collocated with the hi-vol monitors until the standard operating procedure for the continuous PM_{10} monitor was approved by the EPA and the instrument's quality assurance procedures were incorporated into Knoxville's quality management plan and quality assurance project plan (QAPP). Because the PM_{10} hi-vol monitors were replaced with a continuous monitor, there is no collocation requirement. The Network Plan states the PM_{10} monitor is a special purpose monitor; however, it is a SLAMS monitor in AQS.

The 2015 Network Plan noted that the Luttrel monitor (AQS # 47-173-0107) "will be recommended to not remain in operation over the next 5 years (2015 thru 2020) primarily because the area is attaining the PM_{10} NAAQS and has historically met the revised 24-hour level over the past 3 years of operation;" however, the 2015 Network Plan did not state that the monitor would be shut down at the end of 2015. The monitor is not mentioned (either as operating or as having been shut down) in the 2016 Network Plan. While EPA is not required to approve this shut down since the monitor is a special purpose monitor (SPM), the shutdown does need to be included in the Network Plan. The TDEC noted in the 2017 Network Plan that the Luttrel PM_{10} SPM was shut down on December 31, 2015.

The state is meeting all PM_{10} collocation requirements for manual methods found in 40 CFR Part 58, Appendix A, 3.3.4. Those requirements include that: 15% percent of each network of manual PM_{10} methods (at least one site) must be collocated, and the sites with collocated monitors should be among those measuring annual mean concentrations in the highest 25 percent of the network. These collocation requirements are assessed at the primary quality assurance organization (PQAO) level.

$PM_{2.5}$ Monitoring Requirements
40 CFR Part 58, Appendix A, Section 3.2.3
40 CFR Part 58, Appendix D, Section 4.7 and Table D-5

The state of Tennessee's $PM_{2.5}$ monitoring network meets the minimum requirements found in 40 CFR Part 58, Appendix D, Table D-5 for all MSAs. All manual $PM_{2.5}$ collocation requirements found in 40 CFR Part 58, Appendix A, Section 3.2.3 are also being met. Fifteen percent of each network of manual $PM_{2.5}$ methods (at least one site) must be collocated. Additionally, according to Appendix A, 3.2.3.4, 50 percent of collocated monitors should be deployed at sites with annual mean concentrations within +/- 20 percent of the NAAQS.

The Jackson $PM_{2.5}$ site (AQS # 47-113-0006) has recently served as the state's collocated $PM_{2.5}$ monitoring site. This will change by December 31, 2017 when it will only contain a single FEM $PM_{2.5}$ monitor. The Loudon site (AQS # 47-105-0108) will serve as the new collocated $PM_{2.5}$ site because it monitored a higher 3-year (2014-2016) DV than the Jackson monitor. The $PM_{2.5}$ monitoring network described in the 2016 Network Plan meets all of the design criteria of 40 CFR Part 58.

The TDEC submitted a letter on March 6, 2017, requesting waivers to the 40 CFR Part 58, Appendix E siting requirements for the Jackson monitoring site (AQS # 47-113-0006) in Jackson, TN and the Lawrence monitoring site (AQS # 47-099-0002) located in Loretto, TN. The TDEC noted existing trees

are encroaching on the monitoring sites and the property owners will not allow the trees to be trimmed or removed. The TDEC's March 6, 2017 letter stated "TDEC DAPC will include the proposed site relocations in the Network Plan that will be provided for public review during the May 1 to June 30, 2017 timeframe." The EPA approved the waiver requests given that the TDEC would propose new locations that meet siting requirements in the 2017 Network Plan, with relocation to occur by December 31, 2017. The 2017 Network Plan referenced the siting waivers, but did not include relocation requests for either the Jackson or Lawrence sites. The EPA will continue to work with the TDEC to find an appropriate monitor location. Once the details of the site are finalized and the state's public inspection process is complete, the state will need to submit an addendum to the Network Plan containing the site proposal. The addendum must include all of the required information for proposed sites under 40 CFR §58.10(b).

The TDEC preliminarily proposed that the Loudon Pope $PM_{2.5}$ site (AQS # 47-105-0108) be relocated to Loudon Elementary School (formerly Loudon Middle School, AQS # 47-105-0109) in its 2015 Network Plan. On March 4, 2016, the TDEC submitted an addendum to the Network Plan requesting this change to the network. The EPA approved the request on March 16, 2016. The $PM_{2.5}$ 2025 federal reference method (FRM) monitor was moved from the Loudon Pope site to Loudon Elementary School on July 3rd, 2016. In instances where relocation occurs, the sites may be deemed to be measuring the same air mass. In these cases, the DVs from the two sites can be linked in order to create a combined DV. The EPA approves the calculation of a combined DV for the Loudon Pope site and the Loudon Elementary School site for ongoing comparison to the NAAQS.

$PM_{2.5}$ Near-road Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.7.1(b)(2)

Regulatory requirements in 40 CFR Part 58, Appendix D, 4.7.1(b)(2) require that "CBSAs with a population of 1,000,000 or more persons, at least one $PM_{2.5}$ monitor is to be collocated at a near-road NO_2 station." $PM_{2.5}$ near-road monitoring was required in the Memphis, TN-MS-AR CBSA and the Nashville-Davidson-Murfreesboro-Franklin, TN CBSA by January 1, 2017. The Memphis Southwest Tennessee Community College near-road site (AQS # 47-157-0100) and the Nashville near-road site (AQS # 47-037-0040) began $PM_{2.5}$ near-road monitoring on January 1, 2017.

$PM_{2.5}$ Continuous Monitoring Requirements
40 CFR Part 58, Appendix D, Section 4.7.2

Regulatory requirements for continuous $PM_{2.5}$ monitoring require that "The State, or where appropriate, local agencies must operate continuous $PM_{2.5}$ analyzers equal to at least one-half (round up) the minimum required sites listed in Table D–5 of this appendix. At least one required continuous analyzer in each MSA must be collocated with one of the required FRM/FEM/ARM [federal reference method/federal equivalent method /approved regional method] monitors, unless at least one of the required FRM/FEM/ARM monitors is itself a continuous FEM or ARM monitor in which case no collocation requirement applies." These minimum continuous $PM_{2.5}$ monitoring requirements are being met in all of the MSAs in the state. Also, the continuous $PM_{2.5}$ collocation requirements are being met in all MSAs. Therefore, the continuous $PM_{2.5}$ monitoring network described in the Network Plan meets all of the design criteria of 40 CFR Part 58.

The TDEC is replacing a large portion of its $PM_{2.5}$ FRM network with BAM 1022 FEM continuous monitors and will eventually equip all $PM_{2.5}$ sites with BAM 1022 continuous monitors. Once the FEM

monitors are installed, the TDEC will conduct a period of correlation testing with the FRM and FEM samplers. After suitable amounts of data are generated, the collocated FRM samplers will be evaluated for possible shutdown. The need for meeting collocation requirements for the remaining filter-based FRMs will be addressed based on the remaining network and minimum requirements for collocation.

$PM_{2.5}$ Background and Transport Sites
40 CFR Part 58, Appendix D, Section 4.7.3

Monitoring requirements in 40 CFR Part 58, Appendix D, Section 4.7.3 state that "each State shall install and operate at least one $PM_{2.5}$ site to monitor for regional background and at least one $PM_{2.5}$ site to monitor for regional transport." The following sites were identified in AQS as background (Table 4) and transport sites (Table 5). The 2017 Network Plan states that the Look Rock site (AQS# 47-009-0101) is an upwind background site; however, it is listed as a regional transport site in AQS. Please make this correction in the 2018 Network Plan.

The EPA requests the TDEC provide a section in its 2018 Network Plan that includes a statement or table showing how the $PM_{2.5}$ background and transport requirements in Tennessee are met.

Table 4. $PM_{2.5}$ Background Sites

AQS ID	County Name	CBSA Short Name	Parameter Description	Monitoring Objective
47-099-0002	Lawrence	Lawrenceburg, TN	$PM_{2.5}$ - Local Conditions Acceptable $PM_{2.5}$ AQI & Speciation Mass	UPWIND BACKGROUND
47-163-1007	Sullivan	Kingsport-Bristol-Bristol, TN-VA	$PM_{2.5}$ Raw Data	UPWIND BACKGROUND

Table 5. $PM_{2.5}$ Transport Sites

AQS ID	County Name	CBSA Short Name	Parameter Description	Monitoring Objective
47-065-0031	Hamilton	Chattanooga, TN-GA	$PM_{2.5}$ - Local Conditions	REGIONAL TRANSPORT
47-009-0101	Blount	Knoxville, TN	Acceptable $PM_{2.5}$ AQI & Speciation Mass	REGIONAL TRANSPORT

$PM_{2.5}$ Chemical Speciation Network (CSN)
40 CFR Part 58, Appendix D, Section 4.7.4

The state of Georgia operates a $PM_{2.5}$ speciation monitor in the Chattanooga-Hamilton County/North Georgia/Alabama maintenance area (AQS # 13-295-0002) and Knoxville operates a supplemental speciation monitor at the Spring Hill monitoring site (AQS # 47-093-1020). The operation of these monitors is consistent with the CSN review recently completed by EPA.

Photochemical Assessment Monitoring Stations (PAMS)
40 CFR Part 58, Appendix D, Section 5.0

With the promulgation of a new ozone NAAQS on October 1, 2015, the EPA finalized changes to the PAMS requirements. By June 1, 2019, Memphis will be required to implement PAMS monitoring at its NCore site at Shelby Farms (AQS # 47-157-0075). In the 2017 Network Plan, Memphis submitted a ceilometer waiver request to allow meteorological measurements for cloud cover and ceiling heights to

be obtained from four nearby sites. The EPA requests additional information prior to approving the waiver request, such as data analysis of the four ceilometers in the area to provide weight of evidence that the data at the four existing sites are statistically similar. Also, we request that the state provide a discussion on the topography of the area including the rationale of why Memphis believes the Shelby Farms site would be characterized appropriately by these ceilometers. The waiver request must explain how the alternative ceilometer data are collected and meet quality assurance requirements. Forty (40) CFR Part 58, Appendix D, Section 5(e) states "[t]he EPA Regional Administrator may grant a waiver to allow representative meteorological data from nearby monitoring stations to be used to meet the meteorological requirements in paragraph 5(b) where the monitoring agency can demonstrate the data is collected in a manner consistent with EPA quality assurance requirements for these measurements."

The EPA will work closely with Memphis to address the implementation challenges of this new monitoring program. At this time, however, the PAMS requirement is being met in the state.

Memoranda of Agreement (MOA) with Neighboring States

The TDEC and its local agencies maintain several MOAs with their neighboring jurisdictions to address minimum monitoring requirements. The TDEC and Kentucky have a MOA addressing O_3 and continuous $PM_{2.5}$ monitoring in the Clarksville, TN-KY CBSA. The TDEC and Virginia have a MOA addressing O_3 in the Kingsport-Bristol-Bristol, TN-VA CBSA. Memphis, Arkansas, and Mississippi have an MOA addressing PM_{10}, $PM_{2.5}$, and O_3 monitoring in the Memphis, TN-MS-AR CBSA. Chattanooga and Georgia have a MOA addressing PM_{10}, $PM_{2.5}$, and O_3 monitoring in the Chattanooga, TN-GA CBSA.

Exceptional Events

As referenced in the Network Plan, EPA received exceptional event intent letters from the TDEC, Chattanooga and Knoxville. The EPA will not act on the letters unless the exceptional event causes a regulatory impact.

Site Assessments

In reference to the Network Plan, 40 CFR §58.10(a)(1) states "[t]he plan shall include a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D, and E of this part, where applicable. The Regional Administrator may require additional information in support of this statement." Site assessment information was included for all monitoring sites in the TDEC's 2017 Network Plan.

Other

Outstanding QA Documents

TDEC

- The TDEC addressed the EPA's comments and resubmitted the criteria pollutant QAPP (TS-QAPP-1) to the EPA for review on August 25, 2017.

Chattanooga

- The EPA sent comments on the QAPP on February 23, 2016. An updated QAPP is anticipated to be submitted December 2017.

Knoxville

- A QMP is anticipated to be submitted December 2017.
- The EPA sent comments on the QAPP on July 31, 2017.

Memphis

- A QMP was submitted to the EPA on December 27, 2016. The EPA held a conference call with Memphis to review comments on February 7, 2017. The QMP has not be resubmitted.
- A QAPP was submitted to the EPA on July 24, 2017. The EPA review is due by November 9, 2017.

Nashville

- The EPA sent comments on the QAPP on February 16, 2016. The QAPP has not been re resubmitted.